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10/812,132	03/29/2004	Jens Peter Wittenburg	PD030014	2177

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EXAMINER	
LI, AIMEE J	

ART UNIT	PAPER NUMBER
2183	

MAIL DATE	DELIVERY MODE
05/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/812,132	WITTENBURG ET AL.	
	Examiner	Art Unit	
	Aimee J. Li	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 05 February 2007 and 23 March 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 March 2007 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-8 have been considered.

Papers Submitted

2. It is hereby acknowledged that the following papers have been received and placed of record in the file: Amendment as filed 05 February 2007; One Month Extension of Time as filed 05 February 2007; and Amendment as filed 23 March 2007.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being taught by Pomerene et al., U.S. Patent Number 4,903,196 (herein referred to as Pomerene).

5. Regarding claims 1 and 5, taking claim 1 as exemplary, Pomerene has taught method for pipeline processing a chain of processing instructions, including the step:

a. Processing said instructions in a chain of succeeding pipeline stages, wherein partial or intermediate first pipeline processing operands or results are intermediately or permanently stored in a operand/result store, e.g. in a register file, for further access at the appropriate time instant or instants by one or more of said pipeline stages (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2),

b. And wherein partial or intermediate second pipeline processing operands or results available in one or more of said pipeline stages are accessed by one or more other ones of said pipeline stages at the appropriate time instant or instants without access to said operand/result store (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2),

c. And wherein a scoreboard is used in which information is stored about the presence or said partial or intermediate operands or results required absence of specific ones of first pipeline processing by subsequent pipeline processing (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2),

d. And wherein in said scoreboard data are stored and updated about in which one or ones of said pipeline stages a currently required operand or result, or currently required operands or results, is - or are - located available for use in one or more other ones of said pipeline stages (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2),

e. And in that in said scoreboard, data are stored and updated about the type of instruction that is related to said currently required operand or result, or currently

required operands or results, wherein said one or more other ones of said pipeline stages makes - or make - use of said data about location and said data about instruction type for accessing directly said currently required operand or result, or currently required operands or results, without need to access data stored in said operand/result store (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2).

6. Claim 5 contains similar limitations as claim 1 and is rejected for similar reasons.

7. Regarding claims 2 and 6, taking claim 2 as exemplary, Pomerene has taught method according to claim 1, wherein said scoreboard contains an individual incrementer for each address of a register in said operand/result store (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2). Claim 6 contains similar limitations as claim 2 and is rejected for similar reasons.

8. Regarding claims 3 and 7, taking claim 3 as exemplary, Pomerene has taught method according to claim 2, wherein the first one of said pipeline stages writes a zero value at the address of a destination register in said scoreboard upon a processing instruction entering said first pipeline stage, and all stage counters related to processing instruction that had previously entered said first pipeline stage are incremented every new cycle if the corresponding pipeline stages are not stalled, such that the current pipeline stage counting number is kept up-to-date, and wherein, upon a processed processing instruction leaving the last pipeline stage of said chain of

pipeline stages, said pipeline stage counting number is set to an end value that is no more incremented (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2). Claim 7 contains similar limitations as claim 3 and is rejected for similar reasons.

9. Regarding claims 4 and 8, taking claim 4 as exemplary, Pomerene has taught method according to claim 1 or 2, wherein said chain of pipeline stages, except said first and the last pipeline stage, feed partial or intermediate second pipeline processing operands or results available in one or more of said pipeline stages to a common bus from which said partial or intermediate second pipeline processing operands or results can be accessed by one or more other ones of said pipeline stages at the appropriate time instant or instants without access to said operand/result store (Pomerene Abstract; column 1, lines 46-62; column 2, lines 12-25; column 4, lines 14-24 and 45-60; column 5, lines 49 to column 6, line 8; column 5, lines 40-63; column 7, line 1 to column 8, line 36; Figure 1; and Figure 2). Claim 8 contains similar limitations as claim 4 and is rejected for similar reasons.

Response to Arguments

10. Examiner withdraws the drawing objections in favor of the replacement drawings.

11. Applicant's arguments filed 05 February 2007 have been fully considered but they are not persuasive. Applicant's argue in essence on pages 3-5

> ...Applicant submits Pomerene fails to anticipate...at least by virtue that it fails to teach or suggest a method for pipeline processing a chain of processing instructions, wherein scoreboard data are scored and updated about the type of

instruction that is related to said currently required operand or result, or currently required operands or results...

12. This has not been found persuasive. Pomerene teaches that the tags track whether the operation done by the execution unit, i.e. the instruction being executed, is a SINK or SOURCE operation, i.e. whether the execution unit is executing a SINK type instruction or SOURCE type instruction. Pomerene explicitly shows the tags in Figure 2 and states in column 7, lines 38-41 "Tag fields in each execution unit each of which can be either a SINK or SOURCE tag, (depending upon operation) that the execute units receive when they are given authority to use a GPR for SOURCE or SINK." As can be seen by this statement alone, the tags, which are similar to a scoreboard, include a tag that identifies whether the operation being performed is a SINK type operation or SOURCE type operation. Applicant's arguments seem to suggest, without explicitly stating, that "the type of instruction" has more meaning than what is found in the claim language. Without language in the claim reflecting Applicant's meaning or an explicit definition in the specification, which the Examiner was unable to find, "the type of instruction" will be interpreted with its broadest reasonable interpretation. In this case, "the type of instruction" is whether the instruction performs a SINK or SOURCE operation. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the type of instruction) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aimee J. Li whose telephone number is (571) 272-4169. The examiner can normally be reached on M-T 7:00am-4:30pm.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Aimee J Li
Examiner
Art Unit 2183

1 May 2007

RICHARD L. ELLIS
PRIMARY EXAMINER